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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/734,224

12/15/2003

Seiji Umemoto

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7590

06/21/2004

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EXAMINER

NGUYEN, THONG Q

ART UNIT

PAPER NUMBER

2872

DATE MAILED: 06/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/734,224

Applicant(s)

UMEMOTO ET AL.

Examiner

Thong Q Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 December 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 12-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 12-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 December 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☐ Certified copies of the priority documents have been received.
 - 2) ☒ Certified copies of the priority documents have been received in Application No. 09/758,165.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. The present Office action is made in response to the Pre-amendment filed on 12/15/2003.

It is noted that in the mentioned Pre-amendment, applicant has canceled claims 1-11 and 26-38. The remaining claims 12-25 are examined in this Office action.

Priority

2. Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). The certified copy has been filed in parent Application No. 09/758,165, filed on 1/12/2001. **Drawings**

3. The formal drawings contain six sheets of figures 1A-14 filed by applicant on 6/6/2001 have been received by the Office.

4. Figure 14 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

5. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description: In particular, the numerical reference "23" as shown in each of figures 7-10 and 13-14 is not mentioned in the specification. A proposed drawing correction, corrected drawings, or amendment to the specification to add the

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reference sign(s) in the description, are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

6. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

7. The disclosure is objected to because the present Summary of the invention does not comply with the requirements as set forth in 37 CFR 1.73. In other words, the present summary is too long and contains numerous details of the inventive device. It is also noted that the summary refers to the prior art (see pages 6 and 7) and also refers to the drawings (see figure 8). Appropriate correction is required.

8. The disclosure is objected to because of the following informalities: The brief description of figure 13 is unclear in comparison with the structure of the device as shown in the drawings. In particular, in page 10 (lines 13-14), applicant has stated that figure 13 is a view showing the relationship between the refractive index and an optical path; however, figure 13 shows a physical structure of the a liquid crystal display. Appropriate correction or explanation is required.

Claim Objections

9. Claim 20 is objected to because of the following informalities: The claim recited a set of alternative shapes of the grooves. However, the use of the

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phrase "such as" (line 3) renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d). Should "such as" be changed to other technical terms to comply with the requirement of 35 USC 112, second paragraph? Appropriate correction is required.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 12-13, 15-19, 22 and 24-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bao et al (EP 867 747) in view of Tai et al (U.S. Patent No. 5,390,276) and Gunjima et al (U.S. Patent No. 5,587,816) (all submitted by applicant).

Bao et al disclose a reflective display system. The system comprises a transparent guide light adhesive to a panel. In columns 14-15 and figs. 9-11, the transparent light guide (20) having two surfaces in which one surface comprises a pattern of prismatic elements and the other surface comprises an adhesive layer (40a) for bonding the light guide to a panel (O). It is also noted that the material for making the adhesive layer (40a) is a resin having its refractive index matching with the refractive index of the transparent guide light (20) and the panel (O). See column 14, for

example. Furthermore, in column 14, lines 39, Bao et al disclose that the refractive index of the adhesive is 1.50. Regarding to the material of the transparent guide light, in column 7, lines 28+, Bao et al disclose that the transparent guide light is made by acrylic resin. While the reference '747 issued to Bao et al does not positively state the value of the refractive index of acrylic material; however, the value of the acrylic resin material is 1.49 as stated by Gunjima et al as can be seen in their patent '816 in columns 17, 18 and 20. Regarding to the prism formation, it is noted that the prismatic configuration as shown in figure 10 in the Bao et al reference comprises a continuously set of triangular-shaped projections wherein each projection is formed by a first plane (22) defined a slightly angle with the surface of the guide light and other plane (21) defined another angle larger than the angle formed by the mentioned first plane with the surface of the guide light. As shown in figure 9, the prismatic configuration comprises a plurality of prismatic projection which each extends in a direction parallel to the side (or entrance) surface of the guide light facing the light source system (30) (see also figure 11). As such, the system provided by Bao et al meets all of the limitations of the device claimed except it does not clearly state that the prismatic configuration formed on one surface of the transparent guide light can be a structure on the surface of the guide light. However, a prismatic configuration can be formed directly on one surface of a guide light or formed as a separately structure coating/bonding on one surface of the guide light is clearly

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suggested to one skilled in the art as can be seen in the optical system provided by Tai et al. In particular, at columns 4-5 and figs. 1-5, Tai et al teach that the arrangement (36) which is a prismatic configuration can be an integral part of the guide light or a separate layer bonding to the guide light. See column 5, lines 7-35. It is also noted that the each of the prism has a triangular shape and the angle defined by each side of the triangular prism with the surface of the guide light can be 40 degrees (see column 5, lines 14-15 and lines 45-46). Thus, it would have been obvious to one skilled in the art at the time the invention was made to utilize the teaching provided by Tai et al by preparing a set of transparent guide light and a layer having prismatic configuration wherein the prismatic layer is able to select by choice of the user/manufacture to integrally form on the surface of the guide light or bonding to the surface of the guide light instead of a unitary guide light with prismatic configuration to control the manufacture cost.

12. Claim 20, as best as understood, is rejected under 35 U.S.C. 103(a) as being unpatentable over Bao et al in view of Gunjima et al and Tai et al as applied to claim 12 above, and further in view of Qiao et al (U.S. Patent No. 5,485,291, submitted by applicant).

The optical film as provided by Bao et al, Gunjima et al and Tai et al does not disclose that the prismatic structure comprises discontinuous grooves. However, the use of a light guide having a prismatic structure formed on one surface thereof wherein the prismatic structure comprises a plurality

of discontinuous grooves is known to one skilled in the art as can be seen in the lighting panel provided by Qiao et al. In columns 2-4, Qiao et al discloses an arrangement of discontinuous grooves on one surface of the light guide (17). Each of the groove is formed by two slopes in which one slope is gentle inclination with the plane of the light guide, i.e. in the range of 1 degree to 15 degrees while the other slope is formed with the plane of the light guide by an inclination in the range of 35 degrees to 55 degrees. It is noted that since the depth of the groove in the range of 5 and 10 micrometers and the angle of the gentle inclination is in the range of 1 degree to 10 degrees; therefore, the length of each discontinuous groove is not smaller than five times as large as a depth of the groove. It is also noted that since the land between two adjacent grooves can be 200 microns; therefore, the area of the discontinuous grooves can be selected or controlled so that it is not larger than 10% of the area of the whole surface of the light guide. Thus, it would have been obvious to one skilled in the art at the time the invention was made to modify the combined product provided by Bao et al, Gunjima et al and Tai et al by utilize a prismatic structure as suggested by Qiao et al for the purpose of improving the optical performance of the whole system.

13. Claims 14 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bao et al in view of Gunjima et al and Tai et al as applied to claim 12 above, and further in view of the Japanese reference No. 11-142618 (submitted by applicant).

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The combined product as provided by Bao et al, Gunjima et al and Tai et al does not disclose that the adhesive layer is a diffusing layer cover with a strip sheet or a tacky layer. However, the use of a strip sheet for covering the adhesive layer when it is not placed in use to prevent the damage to the adhesive layer is known to one skilled in the art as can be seen in the optical film provided in the Japanese reference '618. Thus, it would have been obvious to one skilled in the art at the time the invention was made to modify the optical film as provided by Bao et al, Gunjima et al and Tai et al by using an adhesive layer having a diffusing feature and a strip sheet as suggested by the Japanese reference '618 for the purpose of providing an adhesive layer having a diffusing feature and the strip sheet is removably used to protect the layer before it is placed in use.

14. Claims 12-13, 15-17, 20-22 and 24-25, as best as understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Ciupke et al (U.S. Patent No. 5,461,547) in view of Bao et al (EP 867 747) and Gunjima et al (U.S. Patent No. 5,587,816) (all submitted by applicant).

Ciupke et al disclose a flat panel display lighting system. The system as described in columns 2-3 and shown in figures 1-2 comprises a light guide (11) having upper surface and a lower surface wherein a prismatic configuration is formed on the lower surface of the light guide; a diffusing element (31) disposed adjacent to the upper surface of the light guide (11) and a reflecting element (27) disposed adjacent to the lower surface having prismatic configuration of the light guide. The prismatic

configuration formed on the lower surface of the light guide (11) comprises a set of discontinuous grooves (17) wherein each groove is shaped as an isosceles triangular having two facets (16) which facet is oriented in an angle in the range of 35 degrees to 45 degrees with respect to the plane of the lower surface. With regard to the feature relating to the flat areas as recited in the present claims, it is noted that the flat area defined between two adjacent grooves has an inclination of zero degree and the sum of the projected area of all flat areas of the prismatic configurations is not smaller than 10 times as large as a projected area of the slopes having inclination angle not smaller than 35 degrees. It is also noted that the total area taken by the grooves (17) is small in comparison with the area taken by the flat areas. The support for that conclusion is found in column 3 and figure 2 in which the dimension of each flat area is from 100-250 micrometers and the dimension of the groove is relative small. With regard to the feature relating to the shape of the groove, as recited in claim 17, such feature is merely that of a preferred embodiment and no criticality has been disclosed. The support for that conclusion is found in the present claim 16 which claims the shape of the groove is a triangular. Applicant should note that the shape of the groove as disclosed by Ciupke et al. As a result, the device of Ciupke et al meets all of the limitations of the device as claimed except the use of an adhesive layer having similar refractive index as that of the light guide. However, the use of an adhesive having similar refractive index with an light guide for the purpose of bonding the light

guide to another optical element for the purpose of eliminating the harmful light or the contrast of the device is known to one skilled in the art as can be seen in the system provided by Bao et al. In particular, in columns 14-15 and figs. 9-11, the transparent light guide (20) having two surfaces in which one surface comprises a pattern of prismatic elements and the other surface comprises an adhesive layer (40a) for bonding the light guide to a panel (O). It is also noted that the material for making the adhesive layer (40a) is a resin having its refractive index matching with the refractive index of the transparent guide light (20) and the panel (O). See column 14, for example. Furthermore, in column 14, lines 39, Bao et al disclose that the refractive index of the adhesive is 1.50. Regarding to the material of the transparent guide light, in column 7, lines 28+, Bao et al disclose that the transparent guide light is made by acrylic resin. While the reference '747 issued to Bao et al does not positively state the value of the refractive index of acrylic material; however, the value of the acrylic resin material is 1.49 as stated by Gunjima et al as can be seen in their patent '816 in columns 17, 18 and 20. Thus, it would have been obvious to one skilled in the art at the time the invention was made to modify the system provided by Ciupke et al by using an adhesive having refractive index similar to the light guide for bonding the light guide to the diffusing element as suggested by Bao et al and Gunjima et al for the purpose of eliminating the harmful light or the contrast of the device.

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15. Claims 14 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ciupke et al in view of Bao et al and Gunjima et al as applied to claim 12 above, and further in view of the Japanese reference No. 11-142618 (submitted by applicant).

The combined product as provided by Ciupke et al, Gunjima et al and Bao et al does not disclose that the adhesive layer is a diffusing layer cover with a strip sheet or a tacky layer. However, the use of a strip sheet for covering the adhesive layer when it is not placed in use to prevent the damage to the adhesive layer is known to one skilled in the art as can be seen in the optical film provided in the Japanese reference '618. Thus, it would have been obvious to one skilled in the art at the time the invention was made to modify the optical film as provided by Ciupke et al, Gunjima et al and Bao et al by using an adhesive layer having a diffusing feature and a strip sheet as suggested by the Japanese reference '618 for the purpose of providing an adhesive layer having a diffusing feature and the strip sheet is removably used to protect the layer before it is placed in use.

16. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ciupke et al in view of Bao et al and Gunjima et al as applied to claim 12 above, and further in view of Yokoyama et al (U.S. Patent No. 5,584,556, submitted by applicant).

The combined product provided by Ciupke et al, Gunjima et al and Bao et al does not disclose that the grooves formed on the surface of the light guide are arranged in a continuous manner. However, rearrangement the

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grooves of a prismatic structure in a discontinuous manner or a continuous manner is clearly an obvious matter to one skilled in the art in the process of adjusting the illuminating pattern of a device. Both the mentioned arrangements of the grooves on a surface of a light guide are disclosed in the art as can be seen in the system provided by Yokoyama et al. For instance, the arrangement of the grooves in a discontinuous manner is shown in the embodiments shown in figures 2-18 while the arrangement of the grooves in a continuous manner is shown in the embodiment of figures 19, 23-29. Thus, it would have been obvious to one skilled in the art at the time the invention was made to modify the combined product provided by Ciupke et al, Gunjima et al and Bao et al by rearranging the grooves of the prismatic structure including the continuous manner of the grooves as suggested by Yokoyama et al for the purpose of adjusting the illuminating pattern of the device.

Conclusion

17. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

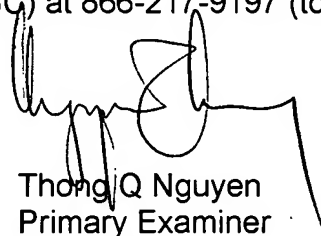
18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thong Q Nguyen whose telephone number is (571) 272-2316. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew A Dunn can be reached on (571) 272-2312. The

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fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Thong Q Nguyen
Primary Examiner
Art Unit 2872
